

# ROTATING NANOMACHINE

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The search for controlled rotary molecular motion which may be employed to actuate nanodevices and chemical processes led to the harnessing of the illustrated nickelacarborane and its motion-producing redox reactions (*Science*, 303, 1849-1851, 2004). Reversible rotation of one dicarbollide ligand with respect to its partner ( $\text{Ni}^{+4}$ , *cis*;  $\text{Ni}^{+3}$ , *trans*) may be controlled with respect to the direction of the rotation by adjusting the stereochemical arrangement of the cage substituents,  $\text{R}^1$ - $\text{R}^4$ . Related motion during the photoexcitation of the  $\text{Ni}^{+4}$  species is observed (Jeffrey I. Zink: CHE 0206857). Computational confirmation of the rotary process and its power output was achieved as well (Daniel Neuhauser: CHE 0315292).

